EDITORIAL

Special issue on system identification and estimation

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It is our great pleasure and honor to organize this special issue "System Identification and Estimation". System identification has been a surprisingly lively and resilient area of research in the control community for many years. It grew out of statisticians' interest in time series analysis beginning in the 1940s and became a "regular control topic" in the 1960s, as indicated by the first IFAC Symposium on System Identification held in Prague, Czech Republic, in 1967. Sixty years later, it is still an important area of research in the field of control. It is relevant to ask why the interest in system identification has remained so intense. One answer might be that more and more applications in engineering require mathematical models and the combined use of system identification and physical modeling is the basic way to obtain reliable models. This special issue is focusing on the latest development, trends, and novel methods for system identification and estimation and these contributions will give interesting and inspiring insights into the current status of the area.

There are 16 papers collected in this special issue. The collections are divided into three groups. The first group collects seven papers that focus on the theory of system identification including the identification with scheduled and quantized observations, the subspace identification method, the regularized and kernel identification method, and the sparse identification method. The second group collects five papers that focus on the state estimation of stochastic systems, cyber-physical systems and quantum systems. The third group collects four papers that devote on the theoretical methods to practical applications including the modeling of propulsion of unmanned surface vehicles, oxygen uptake responses, ball and plate systems, and an active noise control system.

The guest editors hope this special issue could provide a new inspiration for these working in the field of system identification and estimation. We are very grateful to Professor Yiguang Hong, Editor-in-Chief of *Control Theory and Technology*, for inviting us to edit this special issue, and for their advices in the process of preparing this issue, and to Ms. Tiefeng Zou, the Production Editor of this Journal, for her indispensable support and helps. We also wish to express our most sincere thanks to all the authors and reviewers of this issue who have made this special issue possible.

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